

```
import java.util.ArrayList;
import java.util.List;

// Component class
abstract class FileComponent {
    public void add(FileComponent fileComponent) {
        throw new UnsupportedOperationException();
    }

    public void remove(FileComponent fileComponent) {
        throw new UnsupportedOperationException();
    }

    public FileComponent getChild(int i) {
        throw new UnsupportedOperationException();
    }

    public String getName() {
        throw new UnsupportedOperationException();
    }

    public void display() {
        throw new UnsupportedOperationException();
    }
}

// Leaf class
class File extends FileComponent {
    private String name;
```

```
public File(String name) {
    this.name = name;
}

public String getName() {
    return name;
}

public void display() {
    System.out.println("File: " + getName());
}
}

// Composite class
class Directory extends FileComponent {
    private String name;
    private List<FileComponent> components = new ArrayList<>();

    public Directory(String name) {
        this.name = name;
    }

    public void add(FileComponent fileComponent) {
        components.add(fileComponent);
    }

    public void remove(FileComponent fileComponent) {
        components.remove(fileComponent);
    }
}
```

```
public FileComponent getChild(int i) {
    return components.get(i);
}

public String getName() {
    return name;
}

public void display() {
    System.out.println("Directory: " + getName());
    for (FileComponent component : components) {
        component.display();
    }
}
}
```

// Client code to test Composite Pattern

```
public class FileSystemTest {
    public static void main(String[] args) {
        FileComponent file1 = new File("File1.txt");
        FileComponent file2 = new File("File2.txt");
        FileComponent file3 = new File("File3.txt");

        Directory dir1 = new Directory("Dir1");
        Directory dir2 = new Directory("Dir2");

        dir1.add(file1);
        dir1.add(file2);

        dir2.add(file3);
    }
}
```

```
dir2.add(dir1);
```

```
dir2.display();
```

```
}
```

```
}
```